

## INTRODUCTION

Staffs of the Columbia Basin Agricultural Research Center (CBARC-Oregon State University [OSU], Pendleton and Sherman Stations) and the Columbia Plateau Conservation Research Center (CPCRC, USDA-Agricultural Research Service [ARS], Pendleton) are proud to present the results of some of their research. This bulletin contains a representative sample of the work in progress at these centers. A collection of bulletins over a 3-year period will give a more complete assessment of the productivity and applicability of research and education. Changes in staffing, programming, and facilities at these centers during the past year are summarized below.

### Promotions and Awards

Dr. Richard Smiley was nominated for a national research award from the National Association of Wheat Growers. OSU and USDA have a cooperative public relations program and enter a float in the Dress-Up Parade that is held each year in conjunction with the Pendleton Round-Up. This year the float highlighted the 70<sup>th</sup> anniversary of the Long Term Experiments and won the First Place Award in the Commercial Category.

Within the USDA staff, Mark Siemens and John Williams were promoted. Certificates of merit were given to Scott Oviatt and Dale Wilkins for outstanding work performance. Bob Correa, Daryl Haasch, Chris Roager, Dave Robertson, and Terry Starr received awards for outstanding work performance. Tami Johlke was recognized for outstanding productivity and quality research support through plant and soil measurements and evaluation of soil conservation systems.

### Staff Changes

There were relatively few changes to the OSU staff in 2001. Jason Patmore was hired as a Faculty Research Assistant in the weed science program in February. Dr. Stephen Machado was hired in June 2001 as the Dryland Cropping Systems Agronomist. Dr. Machado came to us from a post-doctoral position in Texas where he was responsible for a large precision farming project.

Temporary employees in the OSU programs included Jan Bailey, Brian Baird, Cathy Brown, Rachel Chambers, Brian Currin, Joel Currin, Shelley Dietrick, Shannon Duff, Jennifer Freston, Jeremy Gregory, Shaun Hacquet, Dustin Larson, Deana McBride, Justin Michael, Russell Montgomery, Scott Montgomery, Timothy Royle, Nicholas Sirovatka, David Sisson, Amie Spratling, Deborah Thompson, Angela Tricker, Andrea Wilson, and Ryan Wuest.

There were several additions and changes in ARS staff during the past year (2001-2002). On June 1, 2001, Dr. Ronald Rickman, soil scientist, retired after 35 years of Federal service. Dr. Hero Gollany, Soil Scientist at the University of Minnesota, was selected to fill the position vacated when Dr. Rickman retired.

Stephanie Boyle, was selected as a part-time Biological Science Aid to study the impact of soil management systems on soil microbiology.

Heather Bennett, Eric Boyle, Kevin Collins, Karin Dallas, Melissa Johnson, Jennifer Levy, Aurora Martin, Angela Sallee, Robert

Sanchez, Christina Skirvin, Terry Starr, Sam Womack and Byron Wysocki worked as temporary employees during the summer and school vacations. David Smith worked in the microbiology program as a volunteer.

### **New Projects**

Dr. Richard Smiley initiated a number of trials in 2001 including: greenhouse pathogenicity testing of unknown fungal isolates from chickpea and lupin, as well as long-term cultures; testing of cold tolerance on Australian wheat varieties at the WSU Dryland Experiment Station, Lind, WA; collaborative efforts with scientists in Rivoal, France to identify pathotype (“race”) of PNW cereal cyst nematode; collaborative efforts in Tunisia to determine the molecular and genetic relatedness of *Fusarium pseudograminearum* with other isolates of the fungus elsewhere in the world.

Dr. Steve Petrie initiated a series of field trials to develop recommended agronomic practices for the production of winter malting barley in the Columbia Basin. He is conducting field studies to examine the impact of various nitrogen fertilizer management strategies on the grain yield and quality of advanced lines of malting barley. Other components of the winter malting barley research include studies designed to identify the optimum seeding rate and date, effect of simulated winter injury and barley response to phosphorus, zinc and chloride fertilization.

The ARS re-evaluates its national projects every five-years. This year the Columbia Plateau Conservation Research Center will be evaluating its soil erosion research project and developing new project plans. As stakeholders and interested parties, your suggestions and comments are welcomed. The new project is part of the ARS National Project Soil Resource Management (Number 207). More

information on this National Project can be found on the internet at the following location:

<http://www.nps.ars.usda.gov/programs/programs.htm?NPNUMBER=207>.

Drs. Stewart Wuest and John Williams started testing a small run-off measurement device in cooperation with Don McCool of ARS Pullman. If successful, it would allow inexpensive measurements of water infiltration on farmer’s fields and make it practical to compare different management and cropping systems options.

Dr. Stewart Wuest and Roger Goller started a project to learn how biopore networks develop under a no-till wheat cropping system. The goal is to determine if undisturbed biopores play a role in high infiltration rates measured under no-till.

Dr. Mark Siemens has initiated a project to develop a new type of harvester that will harvest the crop and prepare the residue for direct seeding in a single pass. The benefits of this machine include eliminating or greatly reducing combine tracks in standing stubble, ensuring timeliness of residue management, and potentially lowering costs by reducing the number of passes made over the field.

An ARS and OSU cooperative project was initiated to develop *Fusarium* control options for winter wheat production in low precipitation zones.

### **Facilities and Equipment**

OSU began the process of constructing two new storage buildings, one at Pendleton and a second facility at Moro. The Sherman Endowment Fund is contributing to the construction costs for the building at Moro. Major new equipment purchases include:

Kubota 4610 tractor for spraying along with a monitoring system and a pickup for the weed science program. We upgraded the state office building with new entry doors and locks, fresh paint and new landscaping. A new metal roof and gutters were installed on the Farm Manager's residence.

We also purchased a new telephone router, copier, office furniture for the superintendent, agronomist, and plant pathologist, and two ATV's from surplus for use at Pendleton. Dr. Stephen Machado purchased several instruments for his agronomy program including: soil conductivity meter with digital output, Panasonic Toughbook, analysis system, plant water console, vapor pressure osmometer, digital camera, field mapping and data collection GPS 2 package, black box, MapCalc Professional, CropScan, and TDR-based soil moisture measurement device.

The Sherman Endowment Fund purchased a 4-wheel drive ATV for use at the Sherman Station.

Renovation of the ARS Chemistry Lab was completed in 2001. Renovation included removing one wall, adding cabinets, moving existing cabinets to accommodate computer controlled chemical analyzers and installing two chemical storage cabinets. The main office building and annex doors were upgraded with power-assisted openers for handicap access. Rooms 141, 143, 144 and 145 in the annex were painted. Equipment purchases this past year included upgrading four weather monitoring stations for remote access, water quality turbidity sensor, stationary GPS antenna, computer network server, micro pump for a chemical analyzer, spectrophotometer, bailer, pallet storage racks, and swather.

## **Training**

All OSU employees licensed to apply pesticides completed the appropriate re-certification training. Nathan Blake, Jennifer Gourlie and Ruth Whittaker received their public pesticide applicator licenses. Erling Jacobsen and Karl Rhinhart updated their CDL's while Nick Sirovatka and Paul Thorgersen obtained new CDL's. Sandy Ott completed a nuclear gauge training class.

All USDA staff licensed to apply pesticides completed re-certification training. All staff received updates on cardio-pulmonary resuscitation, first aid, ethics, sexual harassment prevention, and civil rights training. Tami Johlke and Bob Correa attended a 1-day Safety & Stewardship seminar. Pat Frank attended a 2-day course on Travel Training. Amy Baker attended a weeklong course on Laboratory Safety and Health. Linda Baugh attended weeklong course on OSHA Collateral Duty Safety Responsibilities. Steve Albrecht attended weeklong courses for Microlog Software ID Training, L-COR 6400 Training, and a 2-week seminar for New Managers.

## **Visitors**

The Center hosted several special events, including numerous research and planning meetings.

Visitors hosted by the staff at the center included:

Ashok Alva, Research Leader, USDA-ARS, Prosser, WA;  
Mark Hodges, OWC, Portland, OR;  
Richard Roseberg, SOAREC, Oregon State University, Central Point, OR;  
Students from Pendleton High School, Pendleton, OR;

Norm McKinley, DuPont, Salem, OR;  
 Bill Schillinger, Washington State University,  
 Lind, WA;  
 Ron Palmatier, Rain & Hail LLC, Ione, OR;  
 Dan Pero, Rain & Hail LLC, Boise, ID;  
 Steve Parker, Walla Walla, WA;  
 Benno Warkentin, Oregon State University,  
 Corvallis, OR;  
 Gary Kiemnec, Eastern Oregon State  
 University, La Grande, OR;  
 John Ballard, API, Portland, OR;  
 Tim Snowball, Melbourne, Australia;  
 Paul Risser, President, Oregon State  
 University, Corvallis, OR;  
 Stephen Jones, Washington State University,  
 Pullman, WA;  
 Tim Murray, Washington State University,  
 Pullman, WA;  
 Terri Lomax, Oregon State University,  
 Corvallis, OR;  
 Stephen Caruana, Agronomic Analytics,  
 Eugene, OR;  
 Jack Nelson, USDA-ARS-PWA, Albany, CA;  
 Dennis Hull, National Weather Service,  
 Pendleton, OR;  
 Kaoru Ishii, Niigata City, Japan;  
 Jeremy Red Star Wolf, CTUIR, Pendleton,  
 OR;  
 Mike Hogue, Portland, OR;  
 Stephen Machado, Texas A&M University,  
 Lubbock, TX;  
 Haile Tewolde, Cargill, Inc., Brooklyn Park,  
 MN;  
 Elizabeth Sulzman, Oregon State University,  
 Corvallis, OR;  
 Carolyn Yeager, Location Administrative  
 Officer, USDA-ARS, Prosser, WA;  
 Hal Collins, Microbiologist, USDA-ARS,  
 Prosser, WA;  
 Melanie Wilson, Secretary, USDA-ARS,  
 Prosser, WA;  
 Antoinette Betschart, Pacific West Area  
 Director, USDA-ARS, Albany, CA  
 Bob Matteri, Pacific West Area Assistant  
 Director, USDA-ARS, Albany, CA;

Larry Lofton, Pacific West Area  
 Administrative Officer, USDA-ARS, Albany,  
 CA;  
 Bob Zemetra, University of Idaho, Moscow,  
 ID;  
 Norman Sladen, FMC Corp., Pleasant Hill,  
 CA;  
 Peter Bottomley, Oregon State University,  
 Corvallis, OR;  
 Dan McClure, Walla Walla, WA;  
 Larry Lutchter, Morrow County Extension,  
 Oregon State University, Heppner, OR;  
 Michael Unruh, Geritland, Inc., Mt. Shasta,  
 CA;  
 Jerry Walker, Milton-Freewater, OR;  
 Glen Riethmuller, Agriculture Western  
 Australia, Merridin, Western Australia;  
 Larry Boersma, Oregon State University,  
 Corvallis, OR;  
 Dan Rasmussen, Athena-Weston Middle  
 School, Athena, OR;  
 Doug Descamp, Syngenta, Coeur d'Alene, ID;  
 Gary Ferrell, Blue Mountain Seed, Walla  
 Walla, WA;  
 Leonard Jenner, Pendleton, OR;  
 Bruce Mackey, USDA-ARS, Albany, CA;  
 Barbara Wright, First Presbyterian Church,  
 Pendleton, OR;  
 Lisa Sprague, USDA-OIG, Portland, OR;  
 Daniel Smith, Hermiston, OR;  
 Michael Ferguson, Pendleton, OR;  
 Hero Gollany, University of Minnesota, St.  
 Paul, MN;  
 Larry Bishop, Milton-Freewater, OR;  
 Kathy Ingram, Pendleton, OR;  
 Bobby Allen, Hermiston, OR;  
 Bill Jamison, Pendleton, OR;  
 Evie Liss, Extension Specialist  
 Communication, Oregon State University,  
 Corvallis, OR;  
 Lavern Weber, HMS, Oregon State  
 University, Newport, OR;  
 Lori Brogoitti, Pendleton, OR;  
 Bryan Allstott, PGG – Pendleton, OR;

Kim Campbell, Washington State University, Pullman, WA;  
 Kevin Presley, Information Technology Consultant, Oregon State University, Corvallis, OR;  
 Jessica Fisher, Umatilla County Extension, Oregon State University, Pendleton, OR;  
 Billie Parker, Umatilla County Extension, Oregon State University, Pendleton, OR;  
 Lowell Fausett, Project and Cost Manager, Oregon State University, Corvallis, OR;  
 Jeff Newton, Helix, OR;  
 John Finnie, Kenton, Manitoba, Canada;  
 Carolyn Finnie, Kenton, Manitoba, Canada;  
 Steve Evans, Western Farm Service, Athena, OR;  
 Judy Rea, OWC, Ione, OR;  
 Greg Goad, Oregon Wheat Growers League, Pendleton, OR  
 Ernie Moore, Moro, OR;  
 Jay Gibbs, Heppner, OR;  
 Mike Stoltz, Regional Director – Ext. Svc Admin, Oregon State University, Corvallis, OR;  
 Phillip Zurbrick, Oregon Wheat Growers League, La Grande, OR;  
 Larry Bennett, Molaga, WA;  
 Crystal Patten-Doherty, Blue Mountain Community College, Pendleton, OR;  
 Larry Coppock, Adams, OR;  
 Jim Loiland, N.R.C.S., Pendleton, OR;  
 David Close, CTUIR, Pendleton, OR;  
 James Bronson, CTUIR, Pendleton, OR;  
 Aaron Jackson, CTUIR, Pendleton, OR;  
 Alan Wernsing, Athena, OR;  
 Mathias Kolding, Pendleton, OR;  
 Betty Klepper, Pendleton, OR;  
 Sue Waldman, Pendleton, OR;  
 Tom Darnell, Umatilla County Extension, Oregon State University, Milton-Freewater, OR;  
 Fred Crowe, COARC, Oregon State University, Madras, OR;  
 Walt Gary, Walla Walla County Extension,

Washington State University, Walla Walla, WA;  
 Bob Adelman, Pendleton, OR  
 Nathan Adelman, Pendleton, OR

### Seminars

The 2001 OSU/USDA Seminar Series at the Center was coordinated by Chengci Chen. Seminars included the following speakers and topics:

*The Australian Competition: Wheat Improvement and Marketing Systems*, Dr. Dick Smiley, plant pathologist, Columbia Basin Agricultural Research Center, Pendleton, OR, 31 January.

*US Forest Service Passport in Time Projects, Or Getting Back to Reality*, Mr. Tom Darnell, OSU Extension Agent, Milton-Freewater, OR, 7 February.

*The PNW Soft White Wheat Marketing Initiative*, Mr. Mark Hodges, Oregon Wheat Commission, Portland, OR, 8 February.

*Research on Euphorbia, a New Industry Crop, in Oregon*, Dr. Richard Roseberg, Southern Oregon Agricultural Research & Extension Center, Central Point, OR, 28 February.

*Wind Erosion Control Research for Dry Croplands*, Dr. William Schillinger, Agricultural Research Station, Washington State University, Lind, WA, 7 March.

*Soil Quality --- What does it do for Soil Science*, Dr. Benno Warkentin, Department of Crop & Soil Science, Oregon State University, Corvallis, OR, 22 March.

*Development and Feasibility of Perennial Wheat*, Dr. Stephen Jones and Dr. Tim Murray, Pullman, WA, 18 April.

*Biotechnology at OSU*, Dr. Terri Lomax, Department of Botany & Plant Pathology, Oregon State University, Corvallis, OR, 30 April.

*Basic and Applied Research: Highlights on Field Crops Research*, Dr. Stephen Machado, Texas A&M University, Research & Extension Center, Lubbock, TX, 21 May.

*Carbohydrate-Based Plant Growth Products*, Dr. Haile Tewolde, Cargill, Inc., Brooklyn Park, MN, 21 May.

*Soil Water and Carbon Dynamics: 13C and 18O as System Tracers*, Dr. Elizabeth Sulzman, Department of Crop & Soil Science, Oregon State University, Corvallis, OR, 31 May.

*Machinery and Harvesting Technology, Precision Agriculture in Western Australia*, Mr. Glen Philip Riethmuller, Agriculture Western Australia, 8 August.

*Chickpeas: A Processor's Perspective*, Mr. Gary Ferrel, Blue Mountain Seed, Walla Walla, WA, 26 September.

*Estimating Root Zone Soil Water Content Using Limited Soils Information and Surface Soil Moisture Data Assimilation*, Dr. Gary Heathman, USDA-ARS, Great Plains Agroclimate and Natural Resources Research, Chickasha, OK, 29 October.

*Dynamics of C, N, and P in Soil-Water-Air-Plant Continuum*, Dr. Hero T. Gollany, Department of Soil, Water, and Climate, University of Minnesota, St. Paul, MN, 1 November.

## **Liaison Committees**

The Pendleton and Sherman Liaison Committees were led by chairpersons Kay Simpson and Ernie Moore, respectively. These Liaison Committees provide insightful guidance and recommendations on research directions, staffing needs and facilities and equipment needs. These committees provide a crucial communication link between growers and the research community. We encourage you to contact the Liaison Committee chairs with your concerns and suggestions for improvements regarding any aspect of the research centers.

## **Expressions of Appreciation**

The staff wishes to express their appreciation to individuals, associations, and corporations who have given special assistance for the operation of experimental plots on or associated with the center during this past year 2001-2002. The Oregon Wheat Commission continued to provide crucial funding to the OSU programs at the center and we gratefully acknowledge their generous support. We want also to express our sincere appreciation to those individuals, groups and corporations who provided additional equipment, supplies, funds, and labor to help us carry out our mission. These include:

- Agrium
- BASF Corp.
- Bayer Corp.
- Leonard (Buckshot) Carter
- Community Corrections Work-Release Program
- E.I. du Pont de Nemours
- FMC Corp.

- Richard Lieuallen
- Terry Mayberry
- Monsanto Co.
- Richard (Mac) McDonough
- Rohm and Haas
- Tom Neidlinger
- Paul Pargeter
- Neil Pattee
- Pendleton Grain Growers
- Al Sartini
- Stubbs Seed Service
- Zeneca Ag Products.

We want to express our appreciation and thank those who donated labor, supplies, equipment, or funds for the Pendleton Station Field Day. These include:

- Agri-Check
- American Cyanamid Co.
- Aventis Crop Science
- Bank of the West
- BASF Corp.
- Bayer Corp.
- Columbia River Bank
- Community Bank
- E. I. du Pont de Nemours
- Farm Credit Service
- FMC Corp.
- Inland Chemical Service
- Inland Empire Bank
- Kuo Testing Labs
- Monsanto Co.
- Pendleton Bus Co.
- Pendleton Flour Mills
- Pendleton Grain Growers
- Pendleton Main Street Cowboys
- Pioneer Implement
- Rohm and Haas
- The McGregor Co.
- UAP Northwest
- Walla Walla Farmers Coop.
- Western Farm Service
- Wheatland Insurance
- Wilbur-Ellis

We also want to acknowledge and thank the donors who provided buses, meals and other services for the Sherman Station Field Day at Moro, including:

- Columbia River Bank
- Farm Credit Services
- Gustafson
- Klamath First Federal
- Mid Columbia Bus Co.
- Mid Columbia Producers
- Monsanto
- Morrow County Grain Growers
- Pioneer Implement
- Richelderfer Air Service
- Safeway
- Sherman Aviation
- Sherman High School
- Wasco Electric Coop.
- Wilbur-Ellis.

The local county agricultural agents throughout north central and northeastern Oregon have provided invaluable local assistance in locating research sites, coordinating activities with farmer-cooperators, and providing input to our research programs. These tireless individuals

include Mary Corp, Tom Darnell, Jeff McMorran and Don Horneck in Umatilla County; Gordon Cook and Darrin Walenta in Union/Baker/Wallowa Counties; Larry Lutchter in Morrow County; Sandy MacNab in Sherman County; Brian Tuck in Wasco County; and Jordan Maley in Gilliam County

in Oregon. County agricultural agents in Washington have also been key members of our team and we wish to thank Roland Sherman in Columbia County; Bill Schillinger in Adams/Lincoln County; Walt Gary in Walla Walla County; and John Burns in Whitman County.

We wish to express special thanks to the 38 farmers who allowed us to work on their property during the past year (see separate listing). They have performed field operations, loaned equipment, donated chemicals, forfeited yield, and adjusted their practices to accommodate our experiments. The locations of these off-station plot sites are shown on the map that follows.

Steve Petrie  
Superintendent  
OSU-CBARC

We would also like to thank Lori Spencer, a master of science degree student, WSU Tri-Cities, Dept. of Environmental Science and Regional Planning, and the Umatilla Soil & Water Conservation District, Bev Kopperud, Ray Denny, and Felicity Dye for their continued support.

We truly appreciate the support and encouragement of growers, organizations, and businesses with a mission common to ours: to serve in the best manner possible the crop production and resource conservation needs of our region. We welcome your suggestions on how we may continue to improve in our endeavors towards reaching this goal.

Dale Wilkins  
Research Leader  
USDA-ARS-CPCRC